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FILEID**SYSSETPRA

```
  SSSSSSSS  YY      YY   SSSSSSSS   SSSSSSSS  EEEEEEEEEE  TTTTTTTTTT  PPPPPPPP    RRRRRRRR      AAAAAA
  SSSSSSSS  YY      YY   SSSSSSSS   SSSSSSSS  EEEEEEEEEE  TTTTTTTTTT  PPPPPPPP    RRRRRRRR      AAAAAA
SS          YY      YY  SS          SS        EE              TT      PP      PP  RR      RR    AA    AA
SS          YY      YY  SS          SS        EE              TT      PP      PP  RR      RR    AA    AA
SS            YY  YY    SS          SS        EE              TT      PP      PP  RR      RR    AA    AA
SS            YY  YY    SS          SS        EE              TT      PP      PP  RR      RR    AA    AA
  SSSSSS        YY        SSSSSS      SSSSSS    EEEEEEEE        TT      PPPPPPPP    RRRRRRRR    AA    AA
  SSSSSS        YY        SSSSSS      SSSSSS    EEEEEEEE        TT      PPPPPPPP    RRRRRRRR    AA    AA
        SS      YY              SS          SS  EE              TT      PP          RR  RR      AAAAAAAAAA
        SS      YY              SS          SS  EE              TT      PP          RR  RR      AAAAAAAAAA
        SS      YY              SS          SS  EE              TT      PP          RR    RR    AA    AA    ....
        SS      YY              SS          SS  EE              TT      PP          RR    RR    AA    AA    ....
SSSSSSSS        YY      SSSSSSSS    SSSSSSSS    EEEEEEEEEE      TT      PP          RR      RR  AA    AA    ....
SSSSSSSS        YY      SSSSSSSS    SSSSSSSS    EEEEEEEEEE      TT      PP          RR      RR  AA    AA    ....

LL              IIIIII    SSSSSSSS
LL              IIIIII    SSSSSSSS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II        SSSSSS
LL                II        SSSSSS
LL                II              SS
LL                II              SS
LL                II              SS
LL                II              SS
LLLLLLLLLL      IIIIII    SSSSSSSS
LLLLLLLLLL      IIIIII    SSSSSSSS
```

Table of contents

```
0000     1          .TITLE  SYSSETPRA - SET POWER FAIL AST SYSTEM SERVICE
0000     2          .IDENT  'V04-000'
0000     3 ;
0000     4 ;*****************************************************************************
0000     5 ;*                                                                           *
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0000    23 ;*                                                                           *
0000    24 ;*                                                                           *
0000    25 ;*****************************************************************************
0000    26
0000    27 ;++
0000    28 ;
0000    29 ; Facility:
0000    30 ;
0000    31 ; Abstract: SYSSETPRA IMPLEMENTS THE $SETPRA SYSTEM SERVICE WHICH ENABLES
0000    32 ;           A PROCESS TO RECEIVE AN AST WHEN POWER IS RESTORED AFTER A
0000    33 ;           SUCCESSFUL POWER RECOVERY.
0000    34 ;
0000    35 ; Environment:
0000    36 ;
0000    37 ; Author:  RICHARD I. HUSTVEDT, Creation date:  18-JUN-1978
0000    38 ;
0000    39 ; Modified by:
0000    40 ;
0000    41 ;
0000    42 ; 01    -
0000    43 ;--
0000    44
0000    45 ;
0000    46 ; Include files:
0000    47 ;
0000    48          $ACBDEF                         ; DEFINE ACB OFFSETS
0000    49          $PCBDEF                         ; DEFINE PCB OFFSETS
0000    50          $SSDEF                          ; DEFINE SYSTEM SERVICE STATUS CODES
0000    51
0000    52 ;
0000    53 ; MACROS:
0000    54 ;
0000    55
0000    56 ;
0000    57 ; Equated Symbols:
```

```
                     0000     58 ;
00000004             0000     59          ASTADR = 4                      ; ARGUMENT LIST OFFSET TO AST ADDRESS
00000008             0000     60          ACMODE = 8                      ; ARGUMENT LIST OFFSET TO ACCESS MODE
                     0000     61 ;
                     0000     62
                     0000     63 ;
                     0000     64 ; Own Storage:
                     0000     65 ;
                     0000     66          .PSECT  Y$EXEPAGED              ; PAGED CODE
```

```
                                                        .SBTTL  EXE$SETPRA - SET POWER FAIL AST ROUTINE ADDRESS
                                                ;++
                                                ; Functional Description:
                                                ;       EXE$SETPRA IMPLEMENTS THE SYSTEM SERVICE $SETPRA WHICH ENABLES A
                                                ;       PROCESS TO REQUEST AN AST AFTER THE RESTORATION OF POWER FOLLOWING
                                                ;       A POWER FAILURE.  THE AST ROUTINE IS ENTERED WITH A PARAMETER
                                                ;       GIVING THE DURATION OF THE POWER OUTAGE IN .01 SECOND UNITS.
                                                ;       THIS IS A SINGLE SHOT AST AND MUST BE RE-ENABLED EACH TIME IT OCCURS.
                                                ;       IT IS AUTOMATICALLY CANCELED AT IMAGE RUNDOWN.
                                                ;
                                                ; Calling Sequence:
                                                ;       CALLG   ARGLIST,EXE$SETPRA
                                                ;
                                                ; Input Parameters:
                                                ;       ASTADR(AP) - ADDRESS OF AST ROUTINE
                                                ;       ACMODE(AP) - ACCESS MODE, MAXIMIZED WITH THAT OF CALLER
                                                ;
                                                ; Implicit Inputs:
                                                ;       PCB OF CURRENT PROCESS LOCATED VIA SCH$GL_CURPCB
                                                ;
                                                ; Output Parameters:
                                                ;       R0 - COMPLETION STATUS CODE
                                                ;
                                                ; Implicit Outputs:
                                                ;       NONE
                                                ;
                                                ; Side Effects:
                                                ;       NONE
                                                ;
                                                ; Status Codes:
                                                ;       SS$_NORMAL  - NORMAL, SUCCESSFUL COMPLETION
                                                ;       SS$_EXQUOTA - AST QUOTA EXCEEDED
                                                ;
                                                ;--
                                                        .LIST   MEB                     ; Show macro expansions
                                                ;
                                                        .ENTRY  EXE$SETPRA,^M<R2,R3,R4,R5>      ;
50   08 AC   02     00     EF                  EXTZV   #0,#2,ACMODE(AP),R0     ; GET ACCESS MODE ARGUMENT
                    FFF5'  30                  BSBW    EXE$MAXACMODE           ; MAXIMIZE WITH THAT OF CALLER
     51   00000000'EF     9E                  MOVAB   CTL$GL_POWERAST,R1      ; GET ADDRESS OF POWER FAIL AST POINTER
                     61     D5                  TSTL    (R1)                    ; IS THERE ONE CURRENTLY?
                     08     12                  BNEQ    10$                     ; YES, SKIP QUOTA BUSINESS
                 38  A4     B5                  TSTW    PCB$W_ASTCNT(R4)        ; CHECK FOR AST QUOTA
                     15     15                  BLEQ    EXQUOTA                 ; ERROR EXIT IF NO QUOTA
                 38  A4     B7                  DECW    PCB$W_ASTCNT(R4)        ; ONE LESS FOR AST QUOTA
           61    04  AC     D0          10$:    MOVL    ASTADR(AP),(R1)         ; SET ADDRESS OF AST ROUTINE
        0000'C1     50     90                  MOVB    R0,<CTL$GB_PWRMODE-CTL$GL_POWERAST>(R1) ; AND ACCESS MODE FOR AST
     00 24  A4     16     E2                  BBSS    #PCB$V_PWRAST,PCB$L_STS(R4),20$ ; SET POWER AST FLAG FOR PROCESS
                 50     01     3C          20$:    MOVZWL  #SS$_NORMAL,R0          ; RETURN NORMAL SUCCESSFUL COMPLETION
                                04                  RET                     ;
                                                ;
                                                EXQUOTA:                        ; EXCEEDED AST QUOTA
                 50     1C     3C                  MOVZWL  #SS$_EXQUOTA,R0         ; SET STATUS CODE FOR QUOTA EXCEEDED
                                04                  RET                     ; AND RETURN
                                                ;
```

```
                                0034   124          .SBTTL  EXE$POWERAST - INITIATE POWER FAIL AST FOR ALL INTERESTED PROCESSES
                                0034   125 ;++
                                0034   126 ; Functional Description:
                                0034   127 ;       EXE$POWERAST IS CALLED BY THE SWAPPER AFTER A POWER RECOVERY TO
                                0034   128 ;       SEND A SPECIAL KERNEL MODE AST TO EACH PROCESS WHICH HAS ENABLED
                                0034   129 ;       POWER FAIL ASTS.
                                0034   130 ;
                                0034   131 ; Calling sequence:
                                0034   132 ;       JSB     EXE$POWERAST
                                0034   133 ;
                                0034   134 ;--
                                0034   135 EXE$POWERAST::                                ;
                      0070 8F   BB  0034   136          PUSHR   #^M<R4,R5,R6>                   ; SAVE NON-VOLATILE REGISTERS
                00000000'EF   D0  0038   137          MOVL    SCH$GL_MAXPIX,R6                ; SET STARTING PROCESS INDEX FOR SCAN
                                003F   138 PCBLOOP:                                        ;
              00000000'FF46   D0  003F   139          MOVL    @SCH$GL_PCBVEC[R6],R4   ; GET A PCB ADDRESS
                30 24 A4   16   E1  0047   140          BBC     #PCB$V_PWRAST,PCB$L_STS(R4),NEXTPCB ; BRANCH IF NO AST FOR THIS PROC
                  00000000'EF   16  004C   141          JSB     EXE$ALLOCIRP                    ; ALLOCATE AN I/O PACKET
                        27 50   E9  0052   142          BLBC    R0,NEXTPCB                      ; SKIP IF ERROR
                00 24 A4   16   E5  0055   143          BBCC    #PCB$V_PWRAST,PCB$L_STS(R4),10$ ; CLEAR AST FLAG
                        55   52   D0  005A   144 10$:    MOVL    R2,R5                           ; MOVE BASE TO ACB BASE REGISTER
                0B A5    C0 8F   90  005D   145          MOVB    #<<1@ACB$V_QUOTA>!<1@ACB$V_KAST>>,ACB$B_RMOD(R5) ; SET AS SPECIAL AS
                0C A5    60 A4   D0  0062   146          MOVL    PCB$L_PID(R4),ACB$L_PID(R5)     ; SET PID FOR AST
                18 A5    8A'AF   9E  0067   147          MOVAB   B^PROCAST,ACB$L_KAST(R5); SET ADDRESS FO SPECIAL AST
           14 A5   00000000'EF   D0  006C   148          MOVL    EXE$GL_PFATIM,ACB$L_ASTPRM(R5)  ; SET AST PARAMETER
                        52   D4  0074   149          CLRL    R2                              ; NULL PRIORITY INCREMENT
                  00000000'EF   16  0076   150          JSB     SCH$QAST                        ; ENQUEUE AST FOR PROCESS
                                007C   151 NEXTPCB:                                       ;
                        C0 56   F4  007C   152          SOBGEQ  R6,PCBLOOP                      ; CONTINUE FOR ALL PIX VALUES
                  00000000'EF   D4  007F   153          CLRL    EXE$GL_PFATIM                   ; CLEAR DURATION OF POWERFAIL
                      0070 8F   BA  0085   154          POPR    #^M<R4,R5,R6>                   ; RESTORE REGISTERS
                                05  0089   155          RSB                                     ; AND RETURN
                                    008A   156
```

```
                                                H 7
                     008A   158          .SBTTL  PROCAST - SPECIAL KERNEL AST FOR POWERFAIL
                     008A   159 ;++
                     008A   160 ; Functional Description:
                     008A   161 ;       PROCAST RUNS AS A SPECIAL KERNEL AST IN THE CONTEXT OF THE PROCESS
                     008A   162 ;       WHERE IT CAN ACCESS THE ADDRESS OF THE POWER FAIL AST ROUTINE AND
                     008A   163 ;       REQUEUE THE AST AT THE PROPER ACCESS MODE.
                     008A   164 ;
                     008A   165 ;--
                     008A   166 PROCAST:                                             ;
51   00000000'EF   9E  008A   167          MOVAB   CTL$GL_POWERAST,R1               ; GET ADDRESS OF POWER FAIL AST POINTER
     10 A5         61  D0   0091   168          MOVL    (R1),ACB$L_AST(R5)          ; SET CORRECT AST ROUTINE ADDRESS
0B A5   0000'C1    88  0095   169          BISB    <CTL$GB_PWRMODE-CTL$GL_POWERAST>(R1),ACB$B_RMOD(R5) ;
                     009B   170                                                     ; SET CORRECT ACCESS MODE
          61       D4  009B   171          CLRL    (R1)                            ; ZAP AST POINTER
          52       D4  009D   172          CLRL    R2                              ; SET NULL PRIORITY INCREMENT
     00000000'EF   17  009F   173          JMP     SCH$QAST                        ; QUEUE NORMAL AST
                     00A5   174
                     00A5   175          .END                                        ;
```

```
ACB$B_RMOD                      = 0000000B
ACB$L_AST                       = 00000010
ACB$L_ASTPRM                    = 00000014
ACB$L_KAST                      = 00000018
ACB$L_PID                       = 0000000C
ACB$V_KAST                      = 00000007
ACB$V_QUOTA                     = 00000006
ACMODE                          = 00000008
ASTADR                          = 00000004
CTL$GB_PWRMODE                    ********    X   02
CTL$GL_POWERAST                   ********    X   02
EXE$ALLOCIRP                      ********    X   02
EXE$GL_PFATIM                     ********    X   02
EXE$MAXACMODE                     ********    X   02
EXE$POWERAST                      00000034 RG     02
EXE$SETPRA                        00000000 RG     02
EXQUOTA                           00000030 R      02
NEXTPCB                           0000007C R      02
PCB$L_PID                       = 00000060
PCB$L_STS                       = 00000024
PCB$V_PWRAST                    = 00000016
PCB$W_ASTCNT                    = 00000038
PCBLOOP                           0000003F R      02
PROCAST                           0000008A R      02
SCH$GL_MAXPIX                     ********    X   02
SCH$GL_PCBVEC                     ********    X   02
SCH$QAST                          ********    X   02
SS$_EXQUOTA                     = 0000001C
SS$_NORMAL                      = 00000001
```

Psect synopsis

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
ABS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
Y$EXEPAGED	000000A5 (165.)	02 (2.)	NOPIC USR CON REL LCL NOSHR EXE RD WRT NOVEC BYTE

Performance indicators

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.07	00:00:00.33
Command processing	106	00:00:00.57	00:00:02.05
Pass 1	227	00:00:05.23	00:00:12.15
Symbol table sort	0	00:00:00.85	00:00:02.28
Pass 2	50	00:00:01.02	00:00:02.13
Symbol table output	5	00:00:00.04	00:00:00.05
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	421	00:00:07.80	00:00:19.01

The working set limit was 1200 pages.

28491 bytes (56 pages) of virtual memory were used to buffer the intermediate code.
There were 30 pages of symbol table space allocated to hold 577 non-local and 3 local symbols.
175 source lines were read in Pass 1, producing 16 object records in Pass 2.
10 pages of virtual memory were used to define 9 macros.

+----------------------------+
! Macro library statistics !
+----------------------------+

Macro library name	Macros defined
_255DUA28:[SYS.OBJ]LIB.MLB;1	2
_255DUA28:[SYSLIB]STARLET.MLB;2	4
TOTALS (all libraries)	6

631 GETS were required to define 6 macros.

There were no errors, warnings or information messages.

```
MACRO/LIS=LIS$:SYSSETPRA/OBJ=OBJ$:SYSSETPRA MSRC$:SYSSETPRA/UPDATE=(ENH$:SYSSETPRA)+EXECML$/LIB
```

SYSSETPRA LIS
SYSSETSSF LIS
SYSSNDJBC LIS
SYSSETIME LIS
SYSSETPFM LIS
SYSUPDSEC LIS
SYSSNDMSG LIS
SYSSETPRT LIS
SYSSETPRV LIS
SYSUNWIND LIS
SYSSETSTK LIS
SYSSETMOD LIS
SYSSETEXV LIS
SYSSETPRI LIS
SYSSCHEVT LIS